



Novel Proteins for Detecting DNA Mismatch and Single Nucleotide Polymorphism

Abstract

This invention includes of a group of novel proteins for detecting DNA mismatches and their utilities. These proteins are simple to make and easy to use. Some of the proteins are chimera proteins that can find the mismatch and cut the DNA at an adjacent site. These proteins can be used for finding errors in synthesis of long DNA molecules. For example, these proteins can be added into a DNA solution. After incubation, the proteins can digest the DNA strands with errors that form mismatches. A simple separation based on size can eliminate DNA with errors.

The other proteins can bind to the mismatch with a high affinity. These proteins are useful tools for detecting single nucleotide polymorphism (SNP). The SNP detection method is applicable to free standing DNA molecules, as well as DNA molecules attached to a solid phase, such as DNA microarrays, DNA attached to pre-labeled beads, or DNA on a membrane. Combining with DNA microarray technology, flow cytometry, capillary electrophoresis, or liquid chromatography/mass spectrometry, the invention will enable simple, accurate, high through-put, and cost-effective SNP detection.

Patents:

US Patent 6,365,355, Chimeric proteins for detection and quantitation of DNA mutations, DNA sequence variations, DNA damage and DNA mismatches, McCutchen-Maloney; Sandra L.

US Patent 6,340,566, Detection and quantitation of single nucleotide polymorphisms, DNA sequence variations, DNA mutations, DNA damage and DNA mismatches, McCutchen-Maloney; Sandra L.

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